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ABSTRACT

This paper discusses the development and implementation of a computer-based directed study preservice teacher education course. Specifically, it explains the procedures followed to create the ten multimedia CD-ROMs that comprise the course, and how preservice teachers use the CD-ROMs. Topics to be covered include (1) rationale for course creation; (2) instructional design model used; (3) how source material was obtained; (4) equipment used to obtain source material and create CD-ROMs; (5) course implementation and student feedback; and (6) lessons learned/future directions. (Author/MES)

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Design and Implementation of a Multimedia CD-Rom-Based Directed Study Preservice Teacher Education Course

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Design and Implementation of a Multimedia CD-ROM-Based Directed Study Preservice Teacher Education Course

By: Timothy Morse
Track 1 - Effective Technology Based Learning Environments
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Abstract

Dr. Morse will discuss his development and implementation of a computer-based directed study preservice teacher education course. Specifically, he will explain the procedures he followed to create the 10 multimedia CD-ROMs that comprise the course, and how his preservice teachers use the CD-ROMs. Topics to be covered include (a) rationale for course creation, (b) instructional design model used, (c) how source material was obtained, (d) equipment used to obtain source material and create CD-ROMs, (e) course implementation and student feedback, and (f) lessons learned/future directions.

Proceeding

Teacher educators continuously seek innovative ways to present quality instruction for a number of reasons, including to (a) increase their preservice students' learning, (b) fulfill their institution's mission to generate new knowledge, and (c) address their student body's demographics. Recently innovative uses of computer technology to deliver college courses have proliferated as this technology has penetrated an increasing number of classrooms and homes. In particular, online course offerings in higher education have risen steadily as the Internet and World Wide Web have become more popular. Convenience and

asynchronous access are often cited as reasons why some students prefer to take online courses as opposed to the more traditional form for college courses.

However, online courses are only one type of technology-mediated instruction. As Vanttorn (1998) noted, no one technology works in all settings for all purposes. Hence, college instructors must learn to use technology-mediated instruction that is best suited for their specific purposes. Given these circumstances, another type of technology-mediated instruction that warrants investigation for course delivery is multimedia CD-ROM.

As an alternative to online courses, multimedia CD-ROM-based courses possess the potential for delivering the convenience and asynchronous access students attribute to online courses. In fact, for more than a decade special education teacher educators have used computer-based multimedia instructional materials to demonstrate selected practices in special education (Blackhurst & Morse, 1996; Langone, Malone, & Clinton, 1999; Thorkildsen & Lowry, 1997). While teacher educators are not yet expected to produce these materials, a growing number of institutions are beginning to encourage such efforts (Ludlow, 2001).

During the past two years the lead author has been developing a directed study, multimedia CD-ROM-based course: *Psychology and Education of the Exceptional Individual*. When such initial development efforts are undertaken, they need to be reported so that others can learn from the experience. Consequently, in this paper the instructional systems design issues the author has confronted in developing the aforementioned course are discussed. An instructional systems design involves defining what is to be learned, planning an intervention that will foster learning, conducting assessments to determine if learning objectives were met, and refining the intervention to address unmet objectives (Seels & Glasgow, 1998). Hence, the focus of this paper is the instructional systems design that the author currently believes needs to be followed when this type of technology-mediated instruction is used. This design is highlighted in the following two sections of this paper. First, a course overview is presented. Second, six issues the author has determined must be addressed when this type of technology-mediated instruction is used are identified and described.

Course Overview

Course Objectives and Content

The multimedia, CD-ROM-based course serves as the University's introductory special education course and is the only required special education course for all preservice regular education teachers. Thus, the purpose of this course is to teach basic information about students with disabilities and the operation of special education programs in the public schools. The course is contained on a collection of 10 CD-ROMs. The CD-ROMs include video, audio, graphic, and text files that present: (a) the instructor's lectures; (b) special education activities being performed in local public schools; (c) key special education documents, such as a student's individualized education program, or IEP; and (d) interviews with school

personnel. Hence, the course was a collaborative effort between the University and four public school districts.

The author obtained all of the video and audio source material by videotaping and creating audio recordings of his lectures, and videotaping special education activities being performed in local public schools as well as interviews with school personnel. A Sony DCR-TRV 17 Mini-Digital Video Camera and a Sony ICD-BP 100 IC Recorder were used for these purposes. The source material was converted to video and audio files on a Sony PCV-RX463DS VAIO Digital Studio computer using Sony's DV Gate Motion software to capture video and MGI Videowave III SE to edit it. Audio files were both captured and created using Sony's Digital Voice Editor software. Graphic files of key special education documents were created using an HP ScanJet 5300C scanner and its accompanying software. Text files in which additional lecture materials, a study guide, and information directing the students how to use the CD-ROMs were created in Microsoft Word 2000. The video, audio, graphic, and text files were appropriately assembled as interactive multimedia instructional programs using the multimedia authoring program Lectora. These instructional programs were then "published" as the 10 CD-ROMs that comprise the course.

Rationale for Course Creation

The course is offered at The University of Southern Mississippi, which is a dual campus institution. One campus is located in Hattiesburg, while the second campus (where this course is offered) is headquartered approximately 75 miles south on the Mississippi Gulf Coast in Long Beach. Additionally, courses are offered at three satellite locations along the Coast. The preservice teacher educators for whom this course was created complete the majority of their classes at two locations along the Coast: either Long Beach or Gautier, which is approximately 40 miles east of Long Beach. Since the CD-ROMs present confidential information about special education students, they are housed at secure locations in a library at Long Beach and a computer lab at Gautier in accordance with an agreement between the University and the public schools.

Most of the students who attend University classes on the Coast are non-traditional college students. Consequently, the University's Gulf Coast faculty seek to develop course offerings that meet these students' particular needs, such as the need to have flexibility regarding when and how they complete a course. Given these circumstances, during the past three years an online version of the introductory special education course was made available to these students. Still, some of them requested the creation of a section of this course that offered them even more flexibility. The reasons for their request included not being available to attend the mandatory online sessions (e.g., weekly chat sessions), previous negative experiences with online courses, scheduling conflicts between the online version of this course and other classes the students had to take, and not having access to a personal computer equipped with Internet access.

Consequently, the author secured a grant from the University to create the multimedia CD-ROM-based course. The University annually awards "Summer

Grants for the Improvement of Instruction." These grants release a professor from all teaching responsibilities during the summer semester so the professor can create an innovative way to present instruction. Previous to this the author used grant monies he secured from the University's Preparing Tomorrow's Teachers to Use Technology (PT3) grant to obtain the equipment and generate the content he needed to place on the CD-ROMs.

Course Implementation

Students complete the course by viewing the CD-ROMs. The students can view them any time the facilities where the materials are housed are open. Each student must present proper identification (i.e., their student identification card) to use the materials. Each collection of 10 CD-ROMs is contained in one 3-ring binder equipped with plastic storage pages. A total of six 3-ring binders are available for the students' use.

The entire class meets with the instructor the first Friday of the semester, and then meets with him three additional Fridays. During the first class meeting the syllabus is discussed and use of the CD-ROMs is demonstrated. Three more class meetings are held so the students can complete proctored examinations that pertain to the CD-ROMs. Additionally, each student must complete a take-home exam that is based on the course's required text and write a philosophy of special education paper. These assignments must be submitted to the instructor by their assigned due dates.

The instructor and students remain in touch via telephone, postal mail, student-scheduled meetings, and e-mail. The week following the administration of an exam the instructor sends a letter to each student in which he informs the student of her grade on the exam, encourages the student to schedule a meeting to discuss the exam, and reminds the student about upcoming course requirements (e.g., in-class exams as well as the due dates for the take-home exam and philosophy paper).

Instructional Design Considerations Pertaining to a Multimedia CD-ROM-Based Course

As the author created the multimedia CD-ROMs and considered the course's implementation, evaluation, and revision, he identified six critical issues that must be addressed when this type of technology-mediated instruction is used. These six issues are discussed below.

Establish a Clear Rationale for Developing the Course

The author learned, as have others (Ludlow, Foshay, & Duff, 1998), that creating multimedia instructional materials, especially an entire course that consists of a collection of multimedia CD-ROMs, can be a very time and labor-intensive process. Therefore, before one commits to such an endeavor one should establish a clear rationale/need for developing the course.

Define the End-User

The end-user will drive most of the course's design. Three issues pertaining to the end-user that must be addressed are (a) what does she need to learn; (b) what entry-level technology skills does she possess; and (c) how do her demographics (e.g., time available for coursework) impact upon the implementation of the course?

Consider Course Creation Issues

Six items must be addressed before course creation begins. First, one must determine the hardware and software needed to create a multimedia CD-ROM-based course. Second, funding may have to be obtained to purchase these items. Third, protocols must be established to ethically obtain the source material (e.g., videotapes) that will be placed in the course. Fourth, this material will have to be appropriately placed in video, audio, graphic, and text files. Fifth, individual screen and an overall course design will have to be generated. Sixth, a development team should be assembled to create the course. This approach will enable team members to draw upon their expertise and maximize the course's instructional effectiveness (Ludlow, Foshay, & Duff, 1998). This course was created solely by the author and, even though he successfully completed the project independently, his experiences highlight the need for a development team.

Establish Course Implementation Procedures

If a multimedia CD-ROM-based course is being designed to address issues such as convenience and asynchronous access, much thought must be dedicated to course implementation issues. First, students must be made aware of this unique course offering before they register for it. Second, procedures must be established for viewing the CD-ROMs (e.g., where and when). Third, class meetings may have to be scheduled for distributing the syllabus and administering proctored exams. Fourth, procedures for collecting "outside" assignments may have to be established. Fifth, the instructor and students must have ways to contact each other. Sixth, a backup plan for conducting the course must be established in case the CD-ROMs fail to work as planned.

Determine how the Course Will be Evaluated

The course should be evaluated to determine whether the students mastered the learning objectives and liked the course's format, and whether the instructor was satisfied with the design and implementation process. Multiple types of assessment data should be obtained (see Liaupsin (2002) for guidance).

Plan for Course Revision

Course evaluation data should be used to revise the course to enhance student

learning. Also, course content must be updated as events warrant. Thus, one must determine the time and manpower that will be needed to make the course revisions, and simultaneously determine if these resources will be available. One must also recognize that every issue discussed previously must be revisited (e.g., establish a sufficient rationale; identify the end-user).

Conclusion

The development and use of technology-mediated instructional materials by preservice teacher educators will continue to evolve as existing and emerging technologies allow these instructors to create materials that address their specific needs. Teacher educators who create these materials must make an effort to disseminate their work so that others can learn from their experiences. The instructional design experiences of the author that were reported here are an example of this type of information dissemination. Future reports of this work (and other similar work) should include a detailed discussion of actual course implementation issues, as well as instructional effectiveness and efficacy data.

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